NASA Range Safety Program
2006 Annual Report

EMERGING TECHNOLOGY
JOINT ADVANCED RANGE SAFETY SYSTEM (JARSS)

The joint advanced range safety system is a collaborative effort between Dryden Flight Research Center and the Air Force Flight Test Center at Edwards Air Force Base. The effort is to develop a state-of-the-art mission planning, risk analysis, and risk management tool for Range Safety. The Range Safety organizations from all Major Range and Test Facility Bases are being asked to support the development, testing, and operation of uninhabited aerial vehicles and reusable launch vehicles. It is the vision of joint advanced range safety system to provide range safety support for these missions.

Primary System Elements

The joint advanced range safety system consists of two primary elements: a mission analysis software tool and the real-time operations tool. The mission analysis software tool will quantify the range safety risk for a given flight path and its associated vehicle parameters using a computerized method. This method will streamline the range safety analysis process by providing a consistent, high fidelity solution in less time than required by present methods of analysis.

Additionally, the real-time operations tool will provide the Range Safety Officer with near real-time assessment of the range safety risks during flight. This capability has many possible applications for the uninhabited aerial vehicle or reusable launch vehicle operator, including the following:

- Assessment of uninhabited aerial vehicles overflight of populated areas
- Allowing extended flight of an anomalous vehicle
- Recovery of an off-nominal vehicle at an alternate landing site
- Selection of an alternate flight or entry path

Status

The joint advanced range safety system mission analysis software tool is nearing operational status and is expected to be available for government use in 2007. The mission analysis software tool is undergoing an independent software assurance assessment from NASA's Independent Verification and Validation Facility in West Virginia. Work on the joint advanced range safety system real-time operations tool has not begun due to lack of funding.

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Joint Advanced Range Safety System Team

The Joint Advanced Range Safety System Team would like to welcome two new members, the United States Air Force's 30th and 45th Space Wings. The Eastern and Western Launch Ranges have contributed to the development of joint advanced range safety system modules that focus on the Range Safety analysis of space launch vehicles. Welcome aboard.

The Joint Advanced Range Safety System Team would also like to recognize the contributions of Johnson Space Center, Kennedy Space Center, and Wallops Flight Facility for providing valuable input during their initial evaluation of the tool's capabilities.